



A TIBETAN DANCING GIRL.

Note the large ear-rings partly suspended from the hair ; the many braids of hair bound on top of the head ; and the woollen end piece woven into the queue

THE MYSTERY RIVERS OF TIBET

A DESCRIPTION OF THE LITTLE-KNOWN LAND WHERE
ASIA'S MIGHTIEST RIVERS GALLOP IN HARNESS
THROUGH THE NARROW GATEWAY OF TIBET,
ITS PEOPLES, FAUNA, & FLORA .

BY

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"THE LAND OF THE BLUE POPPY," "IN FARTHEST BURMA"
&c., &c., &c.

WITH MANY ILLUSTRATIONS & 3 MAPS

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TO
K. M. W.

In memory of bygone journeys
together as boys, and in the
realisation that had our earthly
paths not diverged, these travels
would have been more fruitful.

AUTHOR'S NOTE

PROFESSOR JAMES WARD, of Cambridge, did me the honour to read through the original manuscript of this book. As a result, I rewrote it. Any merit which may thereby have crept into it, is due to his teaching; those faults which still remain are due to my lack of learning. The debt I owe him will long remain unpaid.

The spelling of Chinese place-names is that used by General H. R. Davies in his map of Yun-nan. (Wade's system.) The spelling of Tibetan places which I visited is transliterated, as accurately as possible, from the Tibetan; for places which I did not visit, I have adopted Mr. Eric Teichman's spelling.

My thanks are especially due to my wife who undertook the laborious and uninteresting task of compiling the index.

F. K. W.

LONDON.

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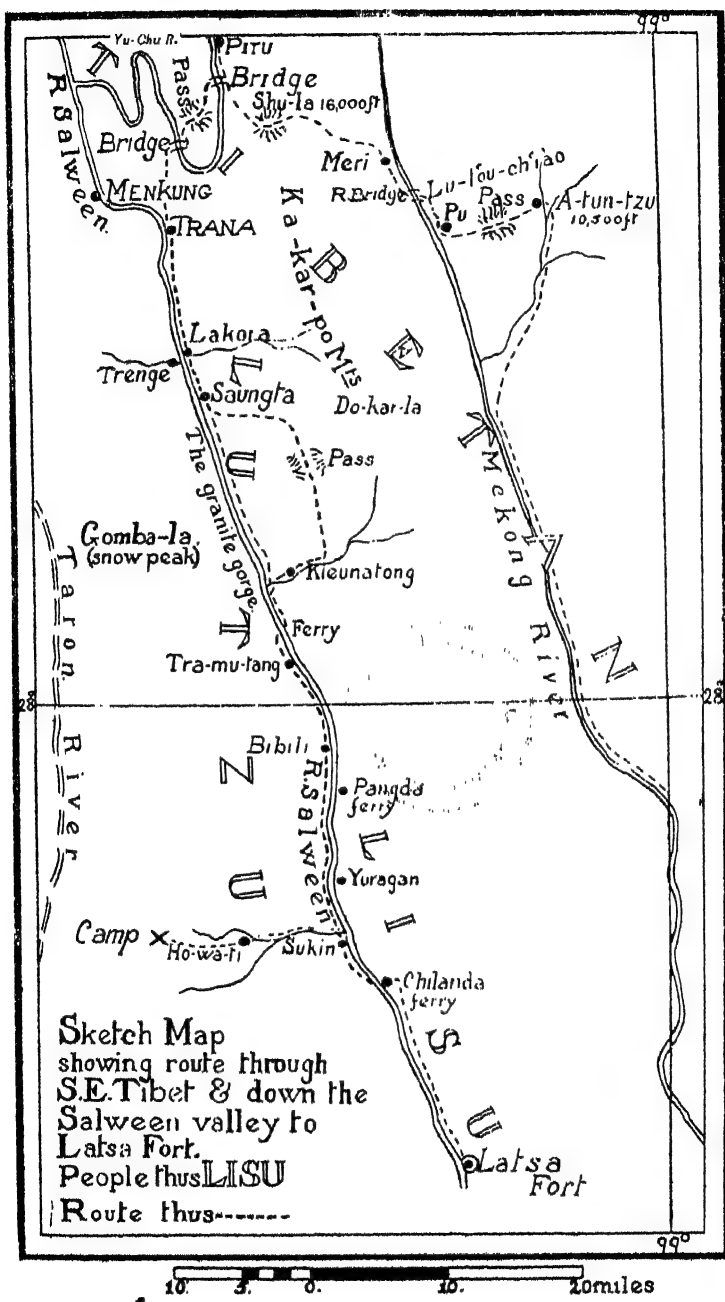
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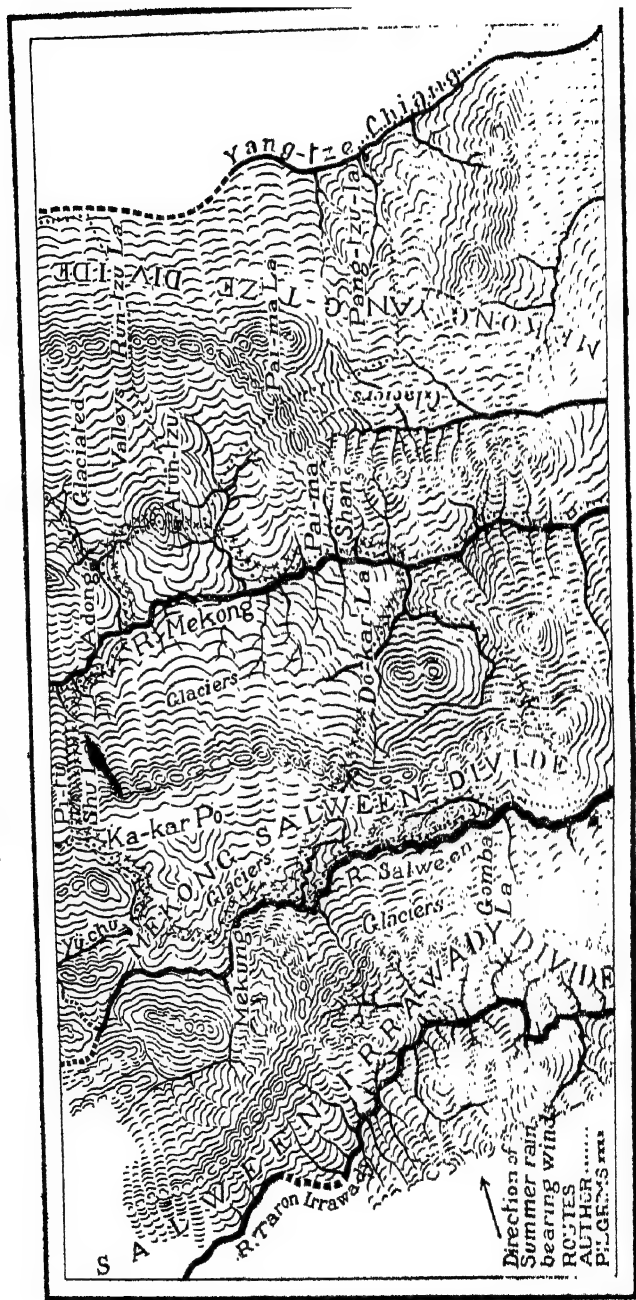
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SKETCH MAP SHOWING DISTRIBUTION OF GLACIERS ON THE YUN-NAN TIBET FRONTIER, AND THE
AUTHOR'S ROUTES ROUND A-TUN-TZU



The Mystery Rivers of Tibet

I

Through the Kachin Hills to China

IN February, 1913, I left England on a plant-hunting trip to Eastern Tibet, travelling via Burma and so by Yun-nan to the belt of deep gorges which stripe the country called Kam. April had come when we crossed the mile-broad Irrawaddy at Myitkyina, northern terminus of the Burma railway, and headed towards the blue mountains which guard the China frontier. Now the pack-mules settled down to the steady two-and-a-quarter miles an hour of Asian travel, and for three days we plodded up through the monsoon forest. The hot weather was upon us, and many of the trees stood naked in the white sunlight. A breeze springs up, whirling down leaves and winged fruits. One of the latter, a species of *Hiptage*, mimics the flight of a butterfly, and suggests that certain butterflies, noticing this, may have modelled their flight to correspond with the motions of spinning fruits, thereby escaping detection.

There was a flattened leguminous pod commonly seen on the ground, which never contained more than one fertile seed; thus it was practically a winged one-seeded fruit. The fertile seed was always situated at the base of the pod, the rest of which formed the wing;

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the seed end of the pod was clothed with a stiff pile of orange-coloured bristles, but the wing was glabrous. Every pod on the ground had been bored through by some insect, and its seed destroyed. Thus had a samara been evolved from a many-seeded pod, perhaps by a gradual seed reduction in order to concentrate protection on a single pod, partly in the form of this hairy envelope. Not that success had yet been attained.

An interesting shrub commonly met with is a species of *Clerodendron*. In the bud the long stamens and style are curled up together like a watch-spring. As the flower opens wide its jaws, however, the ripe stamens curve upwards, and the style downwards, carrying the still unripe stigma out of the way. Presently the stigma ripens, and the style curls upwards towards the entrance, thus coming into contact with insect visitors attracted by the sweet fragrance. Meanwhile the withered stamens, having performed their task, take the place of the style, the two pairs crossing each other so as to form an X as they bend downwards.

By day blood-sucking flies annoyed the mules, settling on their necks and bellies, making them stamp and start and toss their heads angrily.

One morning we halted for lunch on a hill overlooking the forested valleys beyond the 'Nmai hka, where dwell the dog-eating Marus. The river itself was hidden in a maze of hummocky country, dominated by a high sugar-loaf peak. Here and there thin columns of smoke rose into the still air, and beyond were the dim outlines of great mountain ranges; below lay the parched lands of the Irrawaddy plain, sunk in the curdled mist, and around us were the jungle-clad Kachin Hills growing bluer and bluer towards the China frontier.

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Passing through Szi villages we saw women seated on the ground outside long low grass-thatched huts weaving cloth. Dirty, ugly, stunted, they gaily decorated themselves with monstrous bamboo neck rings, metal bangles, tubes thrust through the distorted ear lobes, numerous black rattan rings round the calf, and other uncouth ornaments.

On the 9th April we began the ascent to Kambaiti Pass. The *Bauhinia* trees, though leafless, were in full bloom, painting the hill-side with lilac smudges. There was a handsome species of *Cornus* with compact hemispheres of waxy looking flowers, which are bright orange when they first open, fading as they die. Thus each ball of flowers is orange in the centre, growing paler and paler towards the circumference, giving a very pretty effect.

Another shrub found here is *Agapates Wardii*, which grows on granite rocks or in the boles of big trees. It has curious swollen enlargements of the stem, composed of water-storing tissue, which is eaten by insects, and worn away leaving large cavities.

The top of the pass (about 10,000 feet) was purple with *Primula* sp. This is the frontier. Crossing over, we entered Yun-nan and descended to the Ta-ho, here spanned by a steep bamboo bridge. The mules crossed by a ford higher up. We now found ourselves amongst rolling hills covered with short springy turf and scattered pines; tucked away in sleepy hollows were Lisu villages.

At dusk we reached Ku-yung-kai, a Chinese market town, but the mule inns were yet a couple of miles off across the paddy fields. Reluctantly we set out to pick our way through the swamps, and in the growing darkness were soon utterly bogged; to make matters worse it

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began to rain furiously. There was nothing for it but to return the way we had come, which we did; the last part of the journey being made a little easier for us by some good people who came out carrying torches. Eventually we crowded into the single room of a solitary hut, the mules lying on top of each other in the pigsty.

On the following day our road lay across a flat cultivated valley, through lanes of yellow dog roses, scarlet japonica and snowy apple blossom, by hill-sides covered with pink Camellia and crimson Rhododendron, with porcelain-blue gentians underfoot. Trees of feathery *Cryptomeria* watch over the graves of the dead, and in the wayside marshes, whorls of orange-flowered *Primula chrysochlora* are unfolding. *P. chrysochlora* is very like *P. helodoxa* from the same district. The latter is in cultivation.

At last the bare volcanic hills of T'eng-yueh rose into view. We trod a narrow stone-flagged path, hedged with sprawling bushes of large pink roses; emerged on to the downs, speckled with tombstones of grey lava, where the wind sighs through the grass and the cuckoo calls from the alder copse; and so by peaceful temples and happy villages we came to the noisy little waterfall outside the West Gate. Under the shadow of the city wall my friend, Mr. E. B. Howell, Commissioner of Customs, was awaiting me; and with him I spent three pleasant days.

On April 16th we set out for Tali-fu, through lanes of spring flowers.

Now the muleteers amused me. One of the animals suffered from a "hot stomach" and drastic action was taken. First his belly was pierced, a metal tube thrust

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through the hole, and some fluid drawn off; then blood-letting was resorted to, the mule standing helpless on three legs.

But the men did not confine such gentle attentions to their animals, and one victim of fever was quickly cured by his mates. Taking off his coat he was soundly smacked on the chest and back, in order to drive the bad blood into his extremities; then his arms were roughly massaged, his fingers rubbed down, and finally pricked above the nail. And as the blood oozed out, the fever left him. We passed a wedding procession, the saucy banging of a gong warning us to get out of the way. The bride, with her doll's face thickly powdered, was dressed in new silk trousers and shapeless jacket, with tiny triangular shoes above which bulged her maimed ankles. A thick black veil concealed her from view, for she was sick with shyness, so that a man must walk alongside her pony to hold her on. Followed a tawdry cabinet containing gifts of food, borne at a shuffle by ragged coolies.

We reached Tali-fu on April 27th to find the great fair just over, and the plain rich with colour; fields of green wheat and scented beans, the blue lake crested with frothing waves, the dark mountains glazed with snow, all drenched in golden sunshine.

Northwards we travelled, to the fringes of agricultural China. Everywhere prosperity smiled at us from the brilliant fields; yet everywhere the spectre of want lurked beneath the surface. Beyond the busy city of Chien-ch'uan it poked up its ugly head, and straightway we marched through a moaning avenue composed of human derelicts, maimed, blackened, yet still moving creatures who had once been human beings. Some were

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seated, and in jarring notes, with hands clasped, begged alms of the passer-by; most were prostrate, too weak even to look whether any have troubled to drop a few "cash," a few scraps of food, fit only for starving dogs, into the little bowl set beside each; some, whose skeleton forms partly concealed by dreadful rags showed sores and wounds still more ghastly, were already dead. What a terrible contrast between prosperity and utter destitution! A sea of crops, and along the shore this flotsam thrown up to suffer and die!

Poor wretches! They must needs sleep this night in ditches, or among the graves on the hill-side, with the pariah dogs. Just beside them stands the city of Chien-ch'uan with its teeming population; but the homeless are not allowed inside the city walls, and the people daily give food to the outcasts, at least sufficient to prevent burial of the whole crowd falling on the public purse at once!

Soon the snowy Li-kiang range rose into view. At first sight it appears that the Yangtze river, finding the way barred by this range, had turned back on itself, seeking another route, and had flowed northwards in a U-loop round the end of the range. But it is not so. The Yangtze flows north-north-east, and cuts clean across the snowy range, whose axis is continued beyond Chung-tien.

We reached Li-kiang next day. It is a small unwallled city of steep cobbled streets, situated in a bowl amongst the hills. Near by is the Temple of the Water Dragon, where a stream of pure water gushes from beneath a rock; more picturesquely, a dragon lives beneath the rock, and from his cavernous jaws the water flows out forming a small pond. Here water-lilies float over a

Through the Kachin Hills to China 23

bewitching reflection of the old temple against a background of snowy peaks. .

A fair was in full swing and the city was crowded in consequence. Surrounding lake, temple and spring is a grove of trees, and here within earshot of the gurgling water, the crowd surged 'round the open stage opposite the temple, where a strolling company was about to perform one of those tedious domestic dramas beloved by the Chinese. Open-air stages are found in attendance on Buddhist temples all over China, inside the courtyard if the temple is a big one, but often outside. Originally there was a close connection between religion and the drama; the earliest plays were no doubt always religious. However, they are now so far divorced that in England, even in this so-called enlightened age, many self-righteous people look with horror on the stage. When I asked why temples in China always have stages attached to them I was told it was a matter of convenience. "The temple belongs to the people," said my acquaintance, "and so does the drama!" What more natural than to associate the two!

In a far corner were dwarf Azaleas in pots, massed with crimson and terra-cotta coloured blossom, dwarf pines, and a few orchids of the genus *Cymbidium*. The Chinese, too, love flowers, in an aimless sort of way.

Across the lake was an open meadow, surrounded by booths, and here a motley crowd had assembled. There were sallow-checked Chinese traders, fair-skinned Moso in pleated skirts, tall Tibetans from Chung-tien, lantern-jawed Lisu with hooked noses, and round faced Minchia come out of the west, arguing, expostulating, pleading, bargaining, as Asiatics do.

All the goods exposed for sale were of European or

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Japanese manufacture—clocks, knives, needles, mirrors, and so forth. There was not a single article of Chinese workmanship on view. And why? Because the Chinaman is satiated with them. What *he* wants now is a Homburg hat, a watch, and a pair of leather boots—something *useful*, not merely ornamental. So he looks on apathetically while his country is denuded of its treasures, which become the playthings of a London drawing-room, and imports the machine-made article instead. Presently he will import the machine. Each copies the other, thrice denying his own. And yet it is not *ideas* which are elegant or vulgar, but the things which represent those ideas. The idea of wearing a dressing-gown at the opera sounds bad form—but no, it is the dressing-gown, not the idea that is bad form; for if the dressing-gown is made in Japan instead of in Manchester, you may wear it. Many ladies of my acquaintance wear hat-pins and brooches inscribed with Chinese characters, but if these words, simple little messages like “happiness” and “good luck,” were written in English, they would go without rather than wear them; for no person of taste places a sea-shell painted “A present from Margate” on the drawing-room shelf. And the moral of it all is that China will cut as incongruous a figure misusing our muskets as we figure miscutting her embroideries.

One evening after dark I walked over to the fair when the tumult of business was hushed, and found a group of Tibetans seated round their fire, preferring to sleep beneath the stars they knew and love so well rather than sleep beneath an alien roof. It is very peaceful under the dark pines, where the breeze stirs the big red and yellow lanterns which flicker over the tranquil water.



THE YANGTZE FERRY BOAT.

The mules have to leap over the high stern and the boat, fitted, can be taken across at once.

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Next day I visited the horse bazaar, where fat Chinese merchants were to be seen riding Tibetan ponies up and down the meadow, before purchasing. The rider seated himself on a pile of bedding, thrust his heels into the stirrups, and balanced thus precariously with his knees under his arm pits, started off at a rapid trot.

It was now time to continue our journey, and having secured the services of a caravan returning to Chung-tien, I hired fifteen mules, bought loads of tea and sugar for barter among the Tibetans, and changed my Indian rupees for Chinese silver. Two days later, therefore, on May 16th, we left Li-kiang, and crossing the narrow plain, began to climb up out of the bowl. The snowdrop-trees rained silken petals on us, and the fragrance of many flowers saluted the nostrils. A chain of shallow valleys, linked together by wooded passes, led us in the evening to an open meadow, flanked by a group of snowy peaks. This place was called Kan-hai-tzu, or "dry lake"; soon it would be converted into a marsh by the melting of the snow above, but now herds of sheep, goats and ponies wandered over the emerald-green turf. All round us surged the forest foaming into leaf, the shrill greens of cherry, birch and willow mingling kindly with the jealous yellows of maple and the generous wine-red of rowan; sombre conifers chequered the bright slopes with shadow.

Camp was pitched on a knoll, during the passage of a severe thunder-storm; the altitude was 10,616 feet.

Continuing our journey northwards, next day we descended by a steep stony path to the Yangtze. In the forest, the mule I was riding bolted and leapt down the narrow track, colliding with trees, and dashing violently in amongst the pack mules, causing considerable confusion and not a little pain to the rider.

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The great river here flows north-eastwards, presently to hurl itself into the heart of the Li-kiang range, a spur of which we had just crossed. The steep slopes which confine it are dotted with villages, and cultivated below ; above are pine woods, and still higher, forests clothe the mountains.

On May 18th we crossed to the left bank in the ferry boat, a triangular flat-bottomed scow, large enough to take our fifteen mules, with their loads, and a dozen men across in one trip. However, the muleteers had a job to goad the last half-dozen animals into leaping the high gunwale. The ferry boat was now hauled up-stream under the lee of the bank, and launched into the river, where, caught in the swift current, it went spinning down-stream. Now the men sang in chorus, as they jerked the big fore and aft sweeps ; leaking badly, with the mules doing their best to capsize us, the clumsy scow was wafted slowly across and swung into slack water under the opposite bank, a hundred yards below the starting-point.

The ferry is a new one, started in connection with the telegraph line which runs from Li-kiang northwards to A-tun-tzu.¹

We now left the Yangtze and turning up the gorge of the Chung river camped below the village of Chao-ch'iao-to. On May 19th, still following up the same turbulent stream, we camped on the wet hill-side at an altitude of 8101 feet, and next day crossed a pass, 10,605 feet, descending through forest bordered with tall scapes bearing whorls of golden flowers. This was *Primula chungensis*.

¹ The line was destroyed by the Tibetans in 1917, and has not been restored.

Through the Kachin Hills to China 27

We camped in a clearing where stood two Lisu mat huts, scant protection against the cold wind; the temperature fell to within a few degrees of freezing in the night, and two of the mules wandered away and lost themselves.

Just below our camp a torrent rumbled through a narrow cleft between steep rocky slopes, to which sturdy pines clung like fur. On the rocks were purple orchids (*Pleione yunnanense*).

We had to start without the missing mules on May 21, leaving one of the men to prosecute the search. Ascending through pine woods, we came upon fragrant bushes of *Daphne calcicola* closely hugging the crumbled limestone cliffs. Anon the valley broadened, whimsically, and we entered undulating country, crossing sandy moors carpeted with pink and lavender-blue dwarf Rhododendrons; the latter *Rb. byppophaeoides*, was not previously known. Later it was introduced into this country by Mr. George Forrest, and may be seen in many gardens. The highest point reached during this march was 11,688 feet. Nowhere was there a sign of human habitation; across the river gorge to the west, dreary firs stood with their feet in the snow, under a lowering sky.

We camped in an open meadow backed by a park of pine trees, with the Rhododendron moor beyond. There were patches of dwarf blue iris (*I. kumonensis*) in the park, and masses of snow-white *Primula chionantha* in the bogs, besides many other flowers; even the continuous drizzle could not dim the beauty of this spot.

Across the Chung-tien Plateau

THE missing mules turned up next morning, and we made a late start. After marching a few miles we left the wooded moorland and entered upon wide pastures, where herds of yak grazed. Presently, crossing a low spur, we found ourselves close to the Chung river again, now flowing swiftly between high banks of gravel. Here and there stood massive houses, surrounded by fruit trees. We were on the Chung-tien plateau.

The house in which we slept the night, and to which we were made welcome by the inmates, was scrupulously clean, the brass cooking pots and tea churns brightly polished. Not so the Tibetans themselves.

On May 23rd we traversed a series of shallow valleys hollowed out of the limestone. Here grew species of *Meconopsis*, *Incarvillea*, *Iris*, *Morina*, *Pedicularis*, and other alpine, but they were not yet in flower. Clearly the plateau is an old lake bottom—perhaps at one time a chain of lakes. Streams from the wooded slopes on our right had cut deep chins in the gravel terraces; to the west rose bold rocky ranges.

It was dusk when we reached the city of Chung-tien. After the cold ride across the grassland it was pleasant to enter the kitchen of the inn and warm oneself at the crackling fire. The leaping flames, curling round an

immense iron pot in the centre, afforded the only illumination, and indistinctly lighted up the central pillar—a pine trunk so stout that I could not clasp my arms round it.

Presently a Chinese officer, followed by two soldiers, one of whom swung a gauze lantern a yard high, entered and accosting me with scant ceremony, spoke thus :

“ Do you understand Chinese ? ”

“ Yes, a little.”

“ Where are you going ? ”

“ To A-tun-tzu.”

“ Have you a passport ? ”

“ Yes, from T'eng-yueh ; it is in my box ; I will send it to the *Famen* to-morrow.”

“ You are stopping here to-morrow then ? ”

“ Yes, I have no mules yet ; the Li-kiang men do not wish to go any further.”

The officer bowed and withdrew, and I was left to my own reflections.

Chung-tien is a quaint little city. The high-walled houses, roofed with shingles kept in place by stones, jut out irregularly into the narrow cobbled streets, which thread their crooked way through them. There are some three hundred Tibetan families here, and the great monastery, with several thousand lamas, is a few miles distant. A small Chinese garrison, nominally one hundred men, serves to keep those truculent people in check.¹ Chung-tien would be a splendid place at which to collect transport for a descent upon the fertile plains of Yun-nan, being 11,000 feet above the sea ; there is good grazing, but little agriculture.

¹ Chung-tien was captured by the Tibetans in 1917, during the war of independence. The Chinese have not yet recaptured it—or tried to.

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The local Tibetans are cheerful, nice-looking folk. The women do their hair in three plaits, and a triangular cloth cap, like a baby's sun bonnet, is tied on the top of the head. On feast days, a gorgeously coloured apron is hung over the back and tied across the chest.

Most of the hills round the city are bare, though some are clothed with larch (*Larix tibetica*) and gnarled oak. Eastwards a limestone bulkhead rises to a height of several hundred feet, and behind this range is another broad valley through which a stream meanders northwards to a lake at the head of the plateau; beyond that again are higher ranges, some of them where the Chung river has its source, covered with eternal snow. The striking yellow blossoms of *Daphne calcicola* gilded many of the limestone outcrops in the neighbourhood.

On May 23rd we started northwards once more, passing round extensive swamps gemmed with clusters of rose-pink *Primula fasciculata*. This little bog plant ramps over the black slime, smothering everything in its way. Through a valley to the east the sunshine glittered on the brazen domes of the great monastery, all red and white against the emerald-green turf.

At the extreme head of the plateau we came to a small lake, remnant of an extensive sheet of water; but even this disappears in the winter. That was the last we saw of the verdant Chung-tien plateau with its marshes and flowers, its herds of yak, and its kindly Tibetans. Crossing a well-wooded pass, 12,535 feet, we left the high limestone ranges behind us and descended through lanes of golden-flowered pæonies to the village of T'an-tui, veiled in peach blossom; then on through fragrant pine woods, still descending into drier regions, till the snow-crested Yangtze-Mekong divide filled the horizon.

We had women porters now, strangely clad in coarse trousers so baggy that they resembled skirts, an effect heightened by an apron hanging down back and front. The pig-tail is grotesquely swollen by the addition of wool which is plaited in with the hair, and the whole is bound on top of the head where it bulks large.

After two days we began to drop down more rapidly to the arid gorge of the Yangtze, the rusty red soil of the cultivated uplands giving place to barren gravel and rock, scantily clad with thorny bushes. Here grow *Indigofera calciola*, *Jasminum nudiflorum*, and *Clematis Delavayi*, its silken perianths just pouting their lips as they nodded on slender pedicels; also ash-coloured twiggy bushes of *Justicia Wardii*, *Buddleia eremophila* and *Spiraea sinobrahmica*, all gasping for water. Shrivelled plants of *Campanula colorata* flowered listlessly in the dust with species of *Lychnis* and *Arisaema*.

At the dun-coloured village of Hsien-to, invisible against the sterile background, save for splashes of green walnut trees and pink peach blossom, we crossed a big tributary of the Yangtze; then climbing a high spur, dropped into the long corridor of the great river itself.

The Yangtze here flows due south, so that it was difficult to convince oneself that it was the same river we had crossed ten days earlier. Eventually we reached the ferry at Pang-tzu-la and crossed to the right bank, where we found the people already reaping the spring wheat.

On May 31st we began the ascent of the formidable mountain barrier which still separated us from the Mekong, our baggage being carried by donkeys. Near the monastery of 'Tung-ch'u-ling the hill-sides were dappled with bushes of *Berberis concolor* which rained gold

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dust on the wind. It is a new species. There are many species of *Berberis* in western China, but none of them as fine as the Andine species—*B. Darwinii*, in depth of colour. Next day we entered the forest, following a stony track which grew rapidly steeper. The pines and stubby oaks of the dry forest were gradually replaced by fir trees, the tips of whose branches were trimmed with emerald-green bearing, like fat candles, the sappy purplish red cones; these in turn gave way to tree *Rhododendrons*, larch, and finally dour-looking junipers, their tawny masts often broken off short.

We camped that night at 13,000 feet amidst patches of melting snow and frozen-looking *Rhododendrons*, where tortured larch trees wrestled to the death with the inhospitable climate. On June 2nd we crossed a pass and reached the rolling plateau at the top of the Yangtze-Mekong divide. The summit of the range is conspicuously glaciated. It was a dreadful day, swift showers sweeping up the valley on the wings of the wind; eastwards the snowy peaks of the Pai-ma-shan range were muffled in cloud.

Tramping through snow, we crossed several streams which, flowing from the high rocky spurs to the east, trench deeply through the plateau to join the main glacier stream of Pai-ma-shan. By the roadside two dead mules, with frozen lips parted, grinned at us fixedly.

In the afternoon we crossed the Pai-ma-la, 14,800 feet, and struck the telegraph line to A-tun-tzu, erected in 1912.

There are two distinct passes here, one at either end of the plateau summit. According to Captain Gill, the northern pass is the lower. On General H. R. Davies' map only one pass, the Pai-ma-la, is shown, and that con-



LI-KIANG GIRLS.

They are forced to observe strict chastity, and they are never
 permitted to marry.



A CHINESE GIRL, A MEMBER OF THE LI-KIANG GIRLS.

siderably higher than either of Gill's. It is not clear from the latter's route map which is the pass over the main watershed. Certainly there are two passes, and it is the northern pass, the Pai-ma-la, which crosses the main watershed; but I doubt if General Davies' map is correct when it shows the snowy range as a spur of the main divide. It appears to be the divide itself. The stream rising from the east flank of the snowy range, marked on Davies' map as flowing to the Mekong, really flows due south, and is the source of the Kari river. It flows therefore to the Yangtze.

Camp was pitched on a grassy alp at 12,000 feet. The rain continued all night; and when day broke, puling like a child, we could scarce see a hundred yards through the dense cloud.

Still crossing streams which flowed from the east, we traversed the slope high up, amongst ruby and emerald-budded woods, where cherry, maple, oak, currant, poplar, barberry, willow and Rhododendron were frothing into leaf. Underfoot mauve *Primulas* (*P. minor*) were opening their sleepy eyes and stretching themselves eagerly.

The mountain sides in many places presented a dismal aspect, for they were covered with charred pine forests, only the gaunt and blackened trunks still standing. In the bank numerous charcoal pits had been dug.

Ascending towards the last pass, which crosses a spur whence you drop down into the A-tun-tzu valley near its head, we halted for lunch in a grassy dell, where masses of white-flowered Rhododendron shone like snow. An *Arisaema* was in flower beneath the bushes, its tightly compressed leaflets not yet plucked from the ground by the growing stem. When at last the hoop is

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dragged forth and straightens itself, the solitary leaf expands into an umbrella composed of numerous radiating spear-shaped leaflets, beneath which the spathe shelters itself. Many flies lay dead at the bottom of the mottled cup, imprisoned by the swelling ovules, and an enterprising spider was reaping a rich harvest among the victims.

Early in the afternoon we stood on the pass and looked down on the pale-coloured village of A-tun-tzu, nestling in a horseshoe of mountains. Picture the scene on a radiant afternoon, the barren valley, all steeped in sunshine, chequered with houses surrounded by shady trees and barley fields, little oases which gleam now like emeralds in a base setting, and in autumn one by one turn to gold as harvest time creeps up the valley; the flat-topped hill, full-fledged with flowering shrubs and crowned by the white buildings of the monastery; the crescent of mud-walled houses divided by a single cobbled street rising step by step to the little fort which forms the northern gateway; the whole embraced by high mountains, their lower slopes green with a patchwork of cultivation, their summits rising amongst the frayed clouds which sail across the azure sky.

Due west of the village rises A-tun-tzu mountain, well-timbered below; most of the surrounding slopes are, however, brush clad, being exposed to the hot dry wind which blows up from the Mekong gorge. Here are birch trees and silvery leaved *Hippophæ*, trembling poplars, willows, honeysuckle, currant, *Desmodium*, *Indigofera Philadelphus*, barbery, *Cotoneaster* and *Rhododendron* to mention a few.

Descending from the pass we presently reached a house over which a magnificent maple, breaking into

vivid leaf, threw a delicious shade. Its massive trunk and wide-spreading branches bespoke age ; subsequently I learnt that a Chinaman had offered the owner a hundred taels of silver—about £12—for the tree as it stood. He wished to make *tsamba* bowls out of it. Happily the Tibetans, being fond of their trees and flowers, have not yet reached that restless state symptomatic of the materialistic mind, which wants to turn every natural object into something manufactured, bought for cash. He refused to trade.

A purple-flowered *Buddleia* (*B. incompta*) which grows on the low gravel cliffs by the stream-side was in full bloom. In the spring its leaves are like lacquered silver beneath ; but in autumn the silver changes to gold. However most *Buddleias* are very much alike.

I now settled down in A-tun-tzu and began to make preparations for going into camp on the surrounding mountains, there to search for new flowers. First I engaged the services of a Chinese speaking Tibetan as interpreter, besides two other Tibetans as collectors, who, however, only worked for me intermittently ; these three with my Chinese cook, Lao-wu, and my "boy" Li, formed the staff.

One evening I sat down on the mountain slope beneath bushes of *Rhododendron* aflame with blossom ; numbers of tits chirped and hopped from bush to bush, poking their heads inside the blotched corollas, seeking small beetles. When the dazzle of sunset had been replaced by violet dusk, I looked westwards across the Mekong valley to the sacred mountain of Ka-kar-po,¹ and saw cataracts

¹ རྩ་ཀར་པོ་ "The white mountain." This is a famous sacred mountain of eastern Tibet. "Kar-po" is a common name for snowy peaks in this part of the country.

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of splintered ice frozen to the cliffs over which they plunged; close to the foot of the biggest glacier were several houses scattered over terraces of shining corn. My first journey, I decided, should be to the glacier valley.

N.W. Yun-nan had suffered from an exceptionally severe winter, and spring was late. Though the fine weather had at last begun, the average minimum temperature in A-tun-tzu for nine days (June 4th-12th) was only 43.4° F. (lowest 38.1° F. on June 4th) and the average maximum 66.1° F. (highest 70.5° F. on June 10th). Consequently I could not expect to find very much in flower yet at 13,000 or 14,000 feet, where snow still lay in many places.

There is a much-eroded limestone spire jutting up from the ridge behind A-tun-tzu among an ocean of Rhododendron and Abies. At its foot the snow lay in deep drifts down by the stream, where hemispheres of *Primula sonchifolia* gleamed blue in the cool shade. Pale-pink spikes of *Souliaea vaginata* were also in flower, though the leaves still slept in each other's embrace underground, and the sulphur-yellow poppywort, *Meconopsis integrifolia*, dared not show itself as yet. But the hill-sides were a maze of colour. Birch and maple trees breaking into bright green leaf vied with the wine-red foliage of trembling poplars, and surging round all the Rhododendrons were frothing into flower, whipped into waves of purple and ivory-white. Beneath golden barberry nodded grotesque slipper orchids, the liver-coloured *Cypripedium tibeticum* and the primrose *C. luteum*; long tresses of snowy *Clematis montana* hung from the trees. Already the meadows were one gorgeous cohort of colour.

The summer solstice was celebrated in the village with

feasting and revel. After great preparations the previous night, the street was early deserted, everyone going off into the mountains to picnic. At dusk the happy people returned singing, with bunches of flowers; and the children played games in the mule square till the silver moon set and purple night enfolded the tired village in its embrace.

Flowers & Glaciers

WE did not wait to see the end of the festival, which lasted several days; but set out on June 12th for the Mekong, following a small track almost due west. This path crosses the southern spur of A-tun-tzu mountain, and after traversing the mountain side for some distance drops suddenly down into the Mekong valley.

Looking across the gorge from the pass, we caught a glimpse of vast forests yearning upwards towards the numb white silence, and of mute snowfields gradually quickening to riotous rivers of ice. It was our hunting ground.

After quitting the conifer forest, the hill-sides, at first dotted with magnificent flowered specimens of pink *Azalea* (*Rhododendron yunnanense*) rapidly became drier and more open, till finally, as the stream approached the Mekong, it fell over a precipice and shouldered its way noisily through a deep limestone gorge. Below this we again found ourselves in a region of extreme aridity, tree growth being confined to a narrow belt hugging the stream.

We slept the night at a village called Pu, where twenty or thirty houses are jammed together anyhow, leaving narrow dark lanes between. It was hot in the valley, for the breeze had died down and the minimum that night was 67° F.

Next morning we passed by a grove of fine junipers—the *hsiang-mu-shu* or “scented-wood tree” of the Chinese. Close by was the rope-bridge over the Mekong. The two ropes, one slanting each way, are slung high above the gorge, the steep and rocky cliffs of which, in the bed of the river, are composed of greyish-green and red shales, standing vertical and striking nearly north and south.

While the loads and men were travelling across the rope, a business which took an hour or more, I collected plants and later seated myself on the rocks as close to the river as possible, for I never wearied of watching the rush of water. Here the surface heaves, and great pustules swell up as though gas were being rapidly generated inside them, burst with a hiss, and pass on in swimming foam; there a ridge of water dances over a hidden rock and breaks suddenly, and a little frothing wave tries to crawl back by itself over the hurrying water, but is swept hastily away, to re-form below; a stick comes frolicking down on the roaring tide, is buried for a moment, and reappears a dozen yards away; waves spring up suddenly and slap insolently against the smooth rock slabs, scored with grooves and pot-holes when the flood rose higher than it does now; and whirlpools dart gurgling from place to place like will-o'-the-wisp. It is a fascinating pastime to sit and watch all these ever-changing tricks of the gambolling, shouting Mekong waters, their voice rising throughout the summer, and dying away to a whisper in winter as the red mud sinks out of sight, and the water reflects the blue of heaven.

A climb of about a thousand feet up the steep cliff-side brought us into the glacier valley, the roar of the Mekong growing fainter as we ascended, till suddenly, crossing the

spur, it ceased altogether. Now our ears detected only the shriller rattle of the glacier torrent. In front of us, guarded by a white *chorten*, were the scattered houses of Milong, the little path threading its way amongst cultivated terraces, whose banks were smothered beneath masses of golden St. John's wort, white jasmine and pink *Deutzia*. Arrived at the chief's house, I sat down under a weeping willow and had lunch while we changed porters and made enquiries about reaching the glacier.

Above Milong a path led up the stony valley, crossed the torrent by a wooden cantilever bridge, and ascended great mounds of earth and rock fragments, covered with flowering shrubs and trees—roses, barberry, *Hippophaë*, *Euonymus*, *Ailanthus*, poplar, maple, willow, hazel and many more. We were walking along the summit of an ancient moraine 350 feet above the present ice level and nearly a mile below the snout of the glacier.

Presently we entered the forest. Here one of the most conspicuous features was a magnificent conifer with very much the habit of a pine, and bearing small spherical cones. The path skirts the extreme edge of a tremendous precipice, at the foot of which flows the glacier, rent by many longitudinal crevasses and numerous shallow grooves cut out by streams, though otherwise the gently curved surface of the ice was remarkably smooth. An occasional echo as rocks and stones clattered into a crevasse was the only sound which floated up from below.

In some places the path was hacked out of the cliff on our right, in other places it followed a natural ledge, or a few logs were thrown across a gap in the cliff. Suddenly we came out into a small open space where stood a *mani* pyramid, its base lapped by a surf of blue irises frothing into flower. Here, on the very brink of the



THE MUKONG JUST BELOW THE GORGES.

Showing the main mule road on the left bank.

precipice, stood a dilapidated temple, its courtyard overgrown with rank weeds, and round the wall, rows of leather prayer drums from which the stuffing had burst out in many places. The roof was of wooden slats, kept in place by stones.

So far the forest was composed very largely of conifers, with little undergrowth, but above the wooden temple, henceforth called the lower temple, we entered mixed forest. This is indeed the most conspicuous formation on the Mekong-Salween divide from Ka-kar-po southwards, and here a rich undergrowth surged round the trees.

The path no longer follows the cliff edge, but winds its way up the steep slope of the mountain. Just above the temple, many hundreds of feet above the glacier, is an unmistakable fragment of moraine, buried in the forest, evidently a continuation of the moraine below.

Numerous streams, at first sliding stealthily down bare rock slabs, presently leap over the precipice on to the glacier below. Finally we emerged on to a natural platform, where, on the very brink of the chasm, stood a second wooden temple.

Below, the cliff fell away sheer for hundreds of feet to the glacier, and we had a superb view of the snow peaks at the head of the valley, and of the wonderful ice-fall opposite: even as we looked there came a crack which brought us all to our feet in time to see a huge ice pillar sway for a moment, totter drunkenly, and fall with a roar that went bellowing down the valley, frightening a cloud of green parrots from the trees. So that was our greeting! and indeed the thunder of avalanche and crumbling sérac was with us day and night, becoming more continuous as the summer advanced. By mid-

summer the glacier for a long way below the fall was white with splintered ice as a rocky coast with salt sea spray. It seemed to me that the glacier must be moving at a fair pace to judge by the frequency with which these séracs toppled over the brink.

Behind the temple, thin rock bulkheads separating steep ghylls, develop into an array of pinnacles on the skyline as seen from below, though in reality they are not more than half-way to the ridge. The ridge itself, which was between four and five thousand feet above our platform, was invisible from below on account of the abrupt slope.

The path ended at the temple, and the sheer cliffs soon forbade any attempt to progress further up the valley or descend to the glacier. Consequently, movement in any direction except by the path down the valley, by which we had come, was cramped ; the climb behind the temple, in spite of a steep zigzag path leading up the ridge to a hermit's cave, a thousand feet above, was of the most arduous and sometimes hazardous description. As for the ramshackle temple, henceforward distinguished as the upper temple, it comprised but a single flat-roofed hall with a trinity of mud Buddhas at the back, and behind them, lining the wall, a wooden frame-work containing in pigeon-holes the bulky board-bound volumes of the Tibetan Buddhist scriptures ; a row of squeaky prayer drums outside, a cluster of poles from which fluttered the ragged remains of prayer flags, and an incomparable view of the snow peaks and the ice cataract below.

Of the glacier I must now proceed to give a more detailed account, because it is in itself evidence of a great change which is taking place in this region. To the

north rose the steep spur just described; across the glacier to the south, the view was shut in by the next spur, covered with dense forest. Eastwards, down the valley, we had a view of A-tun-tzu mountain, framed between the two spurs and rising like a wall from the Mekong gorge, while beyond that peeped up the jagged crest of the Yangtze-Mekong divide.

One day I descended from the path, which, as already explained, at first follows the crest of an old moraine, and reached the foot of the glacier. This ends in a tapering snout with several projecting tongues, a little over a thousand feet above Milong village. The face of the ice, where it had caved away, presented a curious honeycomb appearance, the ridges being clearly outlined in dirt, and except for small lateral crevasses, the surface for the last few hundred yards of the glacier, though undulating, was peculiarly smooth; above that, in the gorge, where the moraine came to an end till the lower temple was reached, longitudinal crevasses of great length became prominent, and the surface was billowy. The crevasses, no doubt, engulf everything which falls on to the ice from the cliffs above; there was not the vestige of a moraine in the gorge itself, the ice flowing against the cliff.

The surface of the glacier is distinctly convex in transverse section, owing to the more rapid melting of the ice in proximity to the bare cliffs, especially on the left or north bank, where the cliff faces due south. On this bank, reaching from a point a little above the present ice foot to within half a mile of the village lies the ancient lateral moraine by which we had ascended. It exhibits a double step structure, no doubt indicating two distinct phases in the retreat of the ice to its present level.

From the base to the lower step, A in the sketch (p. 53), the moraine is bare of vegetation ; then comes a narrow belt which is, so to speak, under cultivation ; here plants are beginning to gain foothold, mostly small bushes of *Hippophaë*, *Pyracantha*, and *Rubus* with tufts of grass. The second ledge, A in the sketch, is 150 feet above the glacier, and the summit of the moraine B which is thickly overgrown with forest and traversed by the path between Milong and the lower temple, is 200 feet above the upper ledge. The fact that there is such a sharp distinction between the forest-clad moraine above, where vegetation has firmly established itself, and the bare earth slope below, suggests a periodicity in the retreat of the ice, to which the ledges referred to may be due. Beneath the trees, scratched stones occur, and on the other slope of the moraine, not yet obliterated by debris fallen from the cliffs above, deeply scored rocks may be seen.

Two or three hundred yards below the foot of the glacier, mounds of earth and rocks are piled high, but beyond that the material of the terminal moraine has been sorted and cut into gravel terraces by the stream, though the valley still preserves the deep U-shape in section associated with ice work, and evidence of the previous extension of the ice can be traced at least as far as the village, two miles away.

I asked the local people if the ice had ever extended further and they replied that forty or fifty years ago it had come further down the valley.

Crossing over to the right bank, facing north, there is no moraine to speak of either above or below the glacier foot, nor is there any sheer cliff ; instead, the ice extends as a thin coating protected by earth only a little higher

up the sloping wall, and above that comes bare rock and forest, or, towards the head of the glacier, alpine turf. The gulleys on both sides, however, debouch into the main valley high above the glacier, particularly on the left bank, where we were.

At the lower temple the glacier surface begins to grow very irregular, being ruckled by half-healed transverse crevasses formed at the ice-fall, with pressure ridges between them. The great ice-fall itself is situated far up the valley and ends almost opposite the upper temple.

The question one naturally asks is—how has this tremendous chasm been formed? Has it been laboriously ground out by the ice itself or was the mould ready prepared when the ice was first poured into it? The fact that the glacier once filled the gorge as shown by the moraine on the edge of the cliff near the lower temple, probably a thousand feet above the glacier of to-day, goes for little in face of the fact that the glacier is also proved to have retreated two miles, and as shown by its snout and terminal moraine, to be still retreating; for it may merely have sunk passively to its present level owing to diminution in thickness of the ice, without ever having carved out the gorge at all. In fact, it is obvious that it must also have grown thinner while it was growing shorter.

It is a difficult problem. If the ice did not carve out the gorge, then it must either have been done by water or have a tectonic origin. Personally, I doubt if either water or ice could do the work alone.¹

We stayed only three days at the upper temple as

¹ For a fuller account of this glacier see "Glacial Phenomena on the Yun-nan-Tibet Frontier," *Geographical Journal*, July, 1916.

facilities for exploring the valley were so extremely limited ; moreover the season was still too early for the spring flowers, many of the gullies above the upper temple being choked with snow. Yet the day temperatures were warm enough, the maximum shade temperature varying between 75° F. and 80° F. and the average minimum for the four days (June 14th-17th) being 56.1° F.

Meanwhile I had established myself in the main hall of the temple—not at all an imposing place—behind which were several other smaller rooms where the two or three priests dwelt. Buddhist hells, products of the fertile imagination of some Asiatic mind other than that of Gaudama, who preached no such doctrine, disfigured the wall above my bed, and the trinity of mud idols looked down on me throughout the night watches, without disturbing my slumbers ; sleep was broken only by the thunder of some falling sérac bursting like a shell in the brilliant moonlight.

At dawn the view eastwards to the orange sky beyond the black curtain of the Yangtze-Mekong divide, and the sun shafts presently spraying out behind its highest peak and darting across the Mekong valley, was a sight to sit and dream over.

So far I have said little about the flora of the glacier valley, between 10,000 feet (altitude of the lower temple) and 11,000 feet (altitude of the upper temple) and from 11,000 feet to the crest of the ridge overlooking the temple, about 4000 feet higher ; except that it was composed chiefly of mixed evergreen and deciduous forest, rather open on the steeper slopes, with thickets of small trees and shrubs in sheltered places.

Many of the plants here mentioned were not yet in

flower, being, indeed, only discovered on a subsequent visit to the temple; but it will be best to review here, however briefly, the vegetation as a whole.

On the first day of our visit we tried to reach the summit of the ridge behind the temple, soon discovering that, as already stated, what appeared from below to be the crest, though by no means easily attained, was in reality a long way from the top.

The start was made up a spur following a path through the forest, but when the path came to an end, we scrambled into a dry grassy gully beyond. Thus we worked our way diagonally up the main valley in which direction the climbing became as a matter of fact more and more difficult, and incidentally, the crest of the ridge further and further above us. The almost vertical strata, striking north and south, had given rise to razor-edged ridges cut into shark-toothed pinnacles, and it was up and across these we had to find a way.

Once while resting our attention was drawn to the cliffs across the gully, by a shower of rocks which fell suddenly from the precipice, and looking up, we saw several wild sheep, little dots high up on the cliff, nimbly leaping from rock to rock.

Round the temple were larches and huge *Pseudotsuga* trees, besides many shrubs, including *Gelastrus spiciformis*, *Hydrangea heteromalla*, *Lonicera Henryi*, *Deutzia purpurascens*, and roses. Best of all was a superb *Enkianthus* massed with little bell flowers. In the open were patches of blue irises, and in the shade clumps of rose-flowered *Primula likiangensis*. About 12,000 feet the forest, at least on this side of the valley, facing south, became much thinner and more localised, small shrubs, especially barberry, occupying the steep broken ridges, with meadow

flowers in the gullies ; but the meadow still slumbered and the rocks were dotted with tussocks of dry grass, hiding here and there a white-flowered *Lloydia* (*L. yunnanense*) or yellow lily. Later in the season there were all kinds of flowers here—*Nomocharis*, fragrant *Stellera chamaejasme*, *Morina Delavayi*, blue monkshood, *Allium*, *Primula pseudocapitata* and grass-of-Parnassus—to mention only a few. Still higher, where deep patches of snow lay in the shelter of the rocks, scattered fir trees alone survived of the forest, and the thickets of barberry were replaced by a tanglewood of *Rhododendron*.

After six hours' climbing, which I had found rather exhausting, for the day was hot and the work arduous, we halted at about 14,000 feet, just above the tree limit and a few hundred feet from the crest of the ridge.

The rock, like the vegetation, had changed, granite replacing slate. The spurs became broken up into fantastic tors separated by narrow chasms. On their sheltered sides, wet from the trickle of melting snow, were signs of a rich alpine flora, the few plants that were already in flower, such as the lovely little butterwort *Pinguicula alpina* and *Diapensia himalaica*, both pink and white varieties, occurring in such masses as to colour the rocks. This *Diapensia* is equally abundant on the Yangtze-Mekong divide, but the butterwort is more typical of the rainy Mekong-Salween divide, being common at the Do-kar-la, though it does lurk, a reluctant fugitive, on A-tun-tzu mountain ; whence, together with certain other living fossils making up a sort of floristic island, it has not yet been hunted by the changing climate. Here, in full daylight, the butterwort grew so thickly that the summit of one tall granite stack was painted a bright canary yellow.

The descent by a different route to that which we had followed on the way up was fairly easy, and we found ourselves on the path again in two hours; then, instead of dropping straight down to the temple, the grey wooden roof of which rose amongst the trees, a thousand feet below, we crawled round the base of a precipice and sought the hermit lama in his cave. Hither he retired periodically for contemplation. The lama received us hospitably, and offered us of his best buttered tea and *tsamba*. He had just finished his prayers, behind the curtain, and all the sorcery outfit—bell, book and candle, for exorcising devils and performing other miracles, was spread around the tiny cave where the lama slept and ate and prayed for days together. However, the outside of the cave was even more interesting than the inside, for on a slate cliff just above were great tufts of the lovely chrome-yellow *Primula pulvinata*, one of the Suffruticosa or woody stemmed section of perennial primulas. It lives to a great age, even perhaps for as much as a century, forming clumps as big as a cushion. The plant was in full bloom, the stems, each bearing an umbel of four or five fragrant flowers, scarcely rising above the dense cushions of dark green leaves which closely covered the matted stems below. The foliage is fragrant. This was a happy find, the species being previously unknown; and seeds sent to England flowered at the Edinburgh Botanic Gardens in 1916.

With our backs to the cliff, we now looked down a steep gulley over the green tree-tops, straight to the glacier where it began to try and pull itself together at the foot of the fall. Séracs and fallen bergs were breathlessly jumbled together in boisterous confusion.

At night, in the glow of the full moon, the view of

the glacier from the temple was most impressive, the séracs looking like a long procession of ghosts, as they staggered one by one over the precipice, and slid from summit to base ; then I would start up from my sleep as the temple seemed to shake with the roar of an avalanche, and looking across the glittering gulf, see cascades of snow falling sheer for hundreds of feet from the hanging valley opposite, leaping from ledge to ledge and spattering the rocks below with frozen spume.

It was not till our second visit to the temple, at the end of July, that we succeeded in reaching the summit of the cliff above us. The gullics in July at 13,000-14,000 feet were full of meadow flowers, and the alpine region was carpeted with dwarf Rhododendrons, Cassiope, dwarf barberry, juniper and other plants similar to those found at Ka-kar-po camp.

On the crags at 14,000 feet we found a *Meconopsis* with rich purple flowers, but it was very rare, and always occupied places awkward to get at. A little lower down a dwarf Rhododendron with dull crimson flowers, a new species, was prominent on the rocks, and still lower was a red-flowered comfrey, whose stems, covered with long white silky hairs, made the plant very attractive.

Most beautiful of all were the forests below the upper temple, with the sunlight splashing between the trembling leaves and dancing with the shadows on the carpet of pale blue irises beneath. Here were maples and oaks, lindens, birch trees and a *Pyrus*, whose large silver-backed leaves turn glorious colours in the autumn. Other shade plants in the forest were *Pyrola*, *Vaccinium modestum* and a *Spiranthes* with variegated leaves, all of them uncommon. A feature of this forest was the number and variety of small birds which twittered

amongst the trees. They were mostly dull browns, greys and blacks—not conspicuous, but none the less pretty, tits, fly-catchers, wrens, wood-peckers, thrush-like birds and many more. I have never seen so great a variety of birds before in one place. One had only to sit still under a tree for a few minutes and the curious little creatures came in numbers to look and chirp. One day I saw a troop of short-tailed monkeys, probably *Semnopithecus roxellanae*. Fancy monkeys at 10,000 feet!

On June 17th we started back for A-tun-tzu, and a little above the lower temple there stepped out on to the path to meet us, a black Himalayan bear. I was ahead of the porters at the time, and came straight upon him round the corner, only a few yards distant; but he quickly plunged into the forest where it was impossible to follow him.

We did not cross the Mekong at Milong, but continued down the valley high above the river, and descended to a village near the mouth of a stream, whence a path leads up the ridge to another temple, situated in a smaller glacier valley. The houses were scattered over a sickle-shaped platform bitten out of the bare river walls, with a few outlying farmsteads gleaming white between big shady walnut trees. Many little streams of crystal clear water are diverted from the mountain torrent and rattle down the stony paths, past hedges of pomegranate, all green and scarlet in summer, and pear trees whose fruiting branches are soon to be weighted to the ground between low stone walls covered with maidenhair ferns and polypodies, and through narrow lanes shaded by roses and scented jasmine, to the terraces below.

On every grey-white roof the golden corn is spread for threshing, and in the evening, men and women

stand round in a ring while the flails rise and fall rhythmically. Later on appears a solitary figure, dark against the evening sky, holding a basket and whistling for a wind to come and float the chaff away as she pours out the grain in a thin stream. At sunset, small grubby children, scantily clad in goat-skins, like ancient Britons, idly drive home the flocks of goats that have been feeding all day on the stiff spiny shrubs of the arid valley. It is all very quiet and peaceful, with the thunder of the river instead of the roar of traffic, mountains rising on every hand instead of great buildings, travellers from distant parts of Asia, with the far-away look of the wide world in their eyes, leisurely passing to and fro instead of the constant stream of preoccupied men hurrying by with bowed heads! What do they know of cities, these nomads!

There was a big famished mastiff tied up outside the house where we spent the night. This dog gave me a hostile reception every time I ascended or descended the ladder (for the ground floor was occupied by cattle) till an old lady threw it some goat-skins and ragged brown skirts to lick; then he occupied himself hunting for fleas and lice long treasured up in them, devouring with relish such as he discovered!

Next morning we crossed the river. The main rope was partly under water, and where not immersed, vibrated like a tuning fork with the rush of water. But a second rope had been rigged close by, and though we went perilously close to the chocolate-coloured water at the lower end, we got over without mishap. Last to be slung across the now sagging rope was one of the ponies, and scarcely had he started when a plume of smoke rose into the air from the slider, owing to the tremendous friction against the splintered bamboo.

It was touch and go, for the smoke column grew in volume every second. Would the unfortunate animal ever reach the far bank? Ten yards from shore he struck the hurrying water with a splash; the slider, now almost on fire, stopped dead, and the pony hung immersed to his belly, thoroughly frightened, churning the water ineffectually, till two men swarmed along the rope and dragged him safely ashore, none the worse for his adventure.

Crossing the high spur above us, we reached A-tun-tzu in the afternoon, having been absent a week.

There had been no rain here during our absence, and we stepped straight from grey skies into bright sunshine on the other side of the spur.

SECTION ACROSS GLACIER FOOT, KA-KAR-PO.
(MEKONG-SALWEEN DIVIDE)

The section is not drawn to scale and the slopes are exaggerated.

A B C Ancient moraine, A is 150 feet above the ice level at C and

B is 200 feet above A.

A C Gravel and earth with scratched stones at the top, Bare below, shrubs higher up.

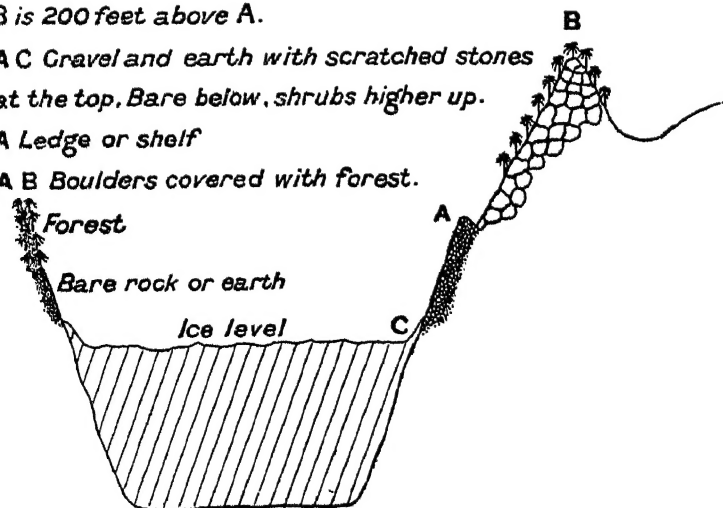
A Ledge or shelf

A B Boulders covered with forest.

Forest

Bare rock or earth

Ice level



The Meadows of Do-kar-la¹

IT was late in June when we started for the Do-kar-la, or "white stone pass," which is on the pilgrims' road round the sacred mountain called Ka-kar-po. Crossing the Mekong by the rope bridge we pitched camp below the forest, where on the dry ash-coloured limestone rocks, *Androsace coccinea* was in flower. It is a lovely plant with its tight rosettes of wee leaves, and close heads of rich cinnabar-red flowers. But it is not hardy.

On the following day we entered the pine forest, where oaks and milk-white Rhododendrons (*Rh. decorum*) also grew; and in the afternoon, being held up by an avalanche which had ploughed across the path, camped by the torrent. All round us grew giant trees, most noticeable being the Conifers, *Picea* and *Pseudotsuga*. Crouching between them were many shrubs, species of *Ribes*, *Hydrangea* and *Euonymus*; woody climbers flung their branches in every direction—here were *Aristolochia moupinense*, *Sabia yunnanensis*, *Akebia*, *Actinidia*, and others; on the moss-grown boulders by the noisy torrent were *Pyrola*, *Spiranthes* and even a yellow-flowered *Impatiens*. A *Crawfordia* with quaint polony-like fruits twined itself happily round the bamboo stems.

Next day we clambered across the wreckage piled up

¹ ལྷོ་རྩེ་ལྷོ་ལྷོ་ Written Doker-la on most maps.

by the avalanche and ascended through the heart of the forest. There were more flowers by the way-side—Corydalis, speckled cuckoo-pint and purple columbine, besides fragrant hyacinth, but the forest undergrowth was scarcely awake as yet. In September it stood six feet high ; while trumpet lilies towered above the ferns and meadowrue, whose purple-beaded flowers nodded amongst leaves of maidenhair which spread fanwise over them.

So we continued with many a check caused by fallen trees and avalanches, till the valley broadened out into sun-kissed meadows ; and here flowers clustered round red-stemmed birch trees. Frail yellow poppies curtsied to us as we passed, travellers' joy lolled over bushes, sprawling languidly here and there, and the purple panicles of tamarisk, in the pebble beds by the stream, waved in the breeze like plumes. Then came a heath composed entirely of dwarf Rhododendrons prostrate beneath the willow trees with pouting perianths borne single or in pairs on slender pedicels, rose-pink, purple and bright canary-yellow. They included several new species, as *Rh. chamaetortum*, *Rh. gymnomiscum*.

We pitched camp by the chattering stream where the meadow was blithe and gay ; higher up, bottle-necked gullies, choked to the mouth with rocks and snow, had vomited everything into it. Here dense bamboo brake disputed the ground with fir forest. Down below on the wetter ground bamboo prevailed, but amongst the tumbled boulders and on the precipices above, Abies, though ragged and forlorn, ever triumphed.

Immediately opposite the spot selected for our camp, the pilgrims' path left the main valley, and climbing steeply up the high granite wall in short zigzags, entered